

Conformable Apparatus in a Drill String

Abstract

An apparatus in a drill string comprises an internally upset drill pipe. The drill pipe comprises a first end, a second end, and an elongate tube intermediate the first and second ends. The elongate tube and the ends comprising a continuous an inside surface with a plurality of diameters. A conformable metal tube is disposed within the drill pipe intermediate the ends thereof and terminating adjacent to the ends of the drill pipe. The conformable metal tube substantially conforms to the continuous inside surface of the metal tube. The metal tube may comprise a non-uniform section which is expanded to conform to the inside surface of the drill pipe. The non-uniform section may comprise protrusions selected from the group consisting of convolutions, corrugations, flutes, and dimples. The non-uniform section extends generally longitudinally along the length of the tube. The metal tube may be adapted to stretch as the drill pipes stretch.